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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,759	03/21/2001	Hiroshi Yagi	OPS Case 526	2425

7590

08/24/2004

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EXAMINER

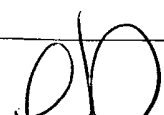
ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/813,759	Applicant(s) YAGI ET AL.	
	Examiner Rudy Zervigon	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address.

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 2, 2004 has been entered.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-7, and 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennin et al (USPat. 5,839,193) in view of Horiuchi (USPat. 6,093,476). Bennin teaches a method of manufacturing a laminate structure (10, Figure 3) load beam (32, Figure 4 – “wireless suspension blank”) as part of a head suspension assembly (“HAS”) for disk drives (column 1, lines 14-32; column 3, lines 56-65). Bennin further teaches a multi-layer laminate (10; Figure 3; column 7, lines 10-40) composed of a stainless steel metallic layer (50) with the “spring” property (column 7, lines 11-19) on one side of a polyimide insulating layer (90; column 7, lines 20-40), an added third metallic layer (70; column 8, line 23 - BeCu) wiring part defined by a pattern (71; Figure 6; column 6, lines 23-35) of conductive material. The pattern including “Conventional lead wires or other conductive traces (not shown) can couple the traces 371 to amplifying and control electronics (not shown).” on the gimbal detail (80; Figure 5; 316; Figure 13) as taught by Bennin (column 11, lines 60-67) – It is inherent that Bennin’s “conventional

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leads” would include “flying leads” as in known in the art. Inclusive, said insulating layer 90, Figure 5 was removed to expose the third metallic layer as taught by Bennin (column 8, lines 8-10). Bennin further teaches etching (column 7, lines 52-67) the stainless steel metallic layer by wet etching using ferric chloride including double-sided etching (column 8, lines 5-9). Bennin further teaches metallic plating a wiring part by electroplating (column 8, lines 48-55) after forming the wiring part – “A fourth manufacturing step can comprise plating selected areas of the first layer 50 and the third layer 70. To improve terminal contacts plating--nickel, gold, silver, tin, etc.--can be applied on connector sites of the third layer 70, such as the proximal end 73 and the distal end 74.” As taught by Bennin.

Bennin further teaches:

A method of manufacturing a wireless suspension blank (32, Figure 4 – “load beam”) using an initial multi-layer laminate (10; Figure 3; column 7, lines 10-40) comprising an insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer”) and a metallic layer (column 7, lines 11-19 - stainless steel metallic layer (50) with the “spring” property) with a spring property, said initial multi-layer laminate (10; Figure 3; column 7, lines 10-40) having opposite side faces (side surface) wherein one of said laminate side faces is defined by an exposed surface (side surface) of said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer”), as claimed by claims 15-17. Bennin further teaches:

- i. a first step of working the metallic layer (column 7, lines 11-19 - stainless steel metallic layer (50) with the “spring” property) by etching to remove metallic material therefrom - etching (column 7, lines 52-67) the stainless steel metallic layer by wet etching using ferric chloride including double-sided etching (column 8, lines 5-9) – claim 2 of Bennin

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- ii. a first step (claim 29,30 – column 18, lines 49-54; 26-31) of adding a wiring part (“forming at least one trace”; claim 1 – column 15, line 44) defined by a pattern of conductive material to said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer”) surface to cover a portion of said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer”) surface with said wiring part and thereby add an additional layer to said initial multi-layer laminate (10; Figure 3; column 7, lines 10-40)
- iii. a second step of adding a wiring part (“forming at least one trace”; claim 1 – column 15, line 44) defined by a pattern of conductive material to said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer”) surface to cover a portion of said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer”) surface with said wiring part and thereby add an additional layer to said initial multi-layer laminate (10; Figure 3; column 7, lines 10-40) - metallic plating a wiring part by electroplating (column 8, lines 48-55) after forming the wiring part – “A fourth manufacturing step can comprise plating selected areas of the first layer 50 and the third layer 70. To improve terminal contacts plating--nickel, gold, silver, tin, etc.--can be applied on connector sites of the third layer 70, such as the proximal end 73 and the distal end 74.”
- iv. a second step (claims 29, 30; column 18, lines 32-35, 55-59) of working the metallic layer (column 7, lines 11-19 - stainless steel metallic layer (50) with the “spring” property) by the wet-etching method to remove metallic material therefrom, as claimed by claim 17
- v. a third step of working (“forming away”, claim 1 – column 15, lines 49-50) the insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer “ – “second layer”, claim

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- 1) after the second step by the wet-etching method (claim 2) to remove insulating material therefrom and from the suspension blank.
- vi. a third step of working (“forming away”, claim 1 – column 15, lines 49-50) the insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer “ – “second layer”, claim 1) after the second step by the plasma etching method (claim 3 of Bennin – column 15, lines 54-56) to remove insulating material therefrom and from the suspension blank.
- vii. a third step of working the insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer “) after the second step by the dry-etching method (claim 3) or the wet-etching method (claim 2) to remove insulating material therefrom and from the suspension blank, as claimed by claim 17

Bennin does not teach etching the stainless steel metallic layer by a photo etching method.

Bennin does not teach plating a wiring part by the semi-additive method. Specifically, Bennin does not teach:

- i. a first step of working the metallic layer (column 7, lines 11-19 - stainless steel metallic layer (50) with the “spring” property) by the photo etching method to remove metallic material therefrom, as claimed by claim 15, 16
- ii. a first step of adding a wiring part (“forming at least one trace”; claim 1 – column 15, line 44) defined by a pattern of conductive material to said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer “) surface by the semi-additive method to cover a portion of said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer “) surface with said wiring part and thereby add an additional layer to said initial multi-layer laminate (10; Figure 3; column 7, lines 10-40), as claimed by claim 17

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- iii. a second step of adding a wiring part defined by a pattern of conductive material to said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer”) surface by the semi-additive method to cover a portion of said insulating layer (90; column 7, lines 20-40 - “polyimide insulating layer”) surface with said wiring part and thereby add an additional layer to said initial multi-layer laminate (10; Figure 3; column 7, lines 10-40) , as claimed by claim 15,16

Horiuchi teaches the manufacture of a wiring composite film (Figures 14-16) including etching a metallic layer (17) by a photo etching method (column 15, lines 50-56) and plating a wiring part by the semi-additive method (column 6, lines 11-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Bennin to etch the stainless steel metallic layer by a photo etching method, and plate a wiring part by the semi-additive method as taught by Horiuchi.

Motivation for Bennin to etch the stainless steel metallic layer by a photo etching method, and for plating a wiring part by the semi-additive method as taught by Horiuchi is to etch the stainless steel metallic layer and plate the wiring part by alternate means as taught by Horiuchi to provide dimensional accuracy (column 2, lines 2-3).

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bennin et al (USPat. 5,839,193) and Horiuchi (USPat. 6,093,476) in view of Mallon (USPat 5,628,869). Bennin and Horiuchi are discussed above. Bennin and Horiuchi do not teach a specific electrode configuration for plasma processing (column 41, lines 12-24). Mallon teaches a both convex and concave electrode configurations for plasma processing (Figures 3-5).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made for Bennin and Horiuchi to use Mallon's electrode for plasma processing.

Motivation for Bennin and Horiuchi to use Mallon's electrode for plasma processing is drawn to wafer topography requirements (column 3, lines 1-18).

Response to Arguments

5. Applicant's arguments filed July 2, 2004 have been fully considered but they are not persuasive.

6. Applicant states:

“

Generally, Applicants continue to note that Bennin only discloses a laminate having the conductive material layer 70 of Bennin already present in the initial laminate. As such, the only way the existing conductive layer can be formed into a wiring circuit in Bennin is by material removal.

“

7. In response, the Examiner notes that Applicant's present claims do not require method steps of fabricating a laminate from its components as opposed to being “already present”. Applicant's claims simply require “using a two layer laminate” and not method steps of forming the components of the laminate. In other words, the claims as understood by the Examiner begin with a three layer laminate structure as taught by Bennin's Figure 3. Further, Applicant's claims simply require “adding a wiring part”. The result of Bennin's etching is the very addition of Bennin's wiring part as detailed above.

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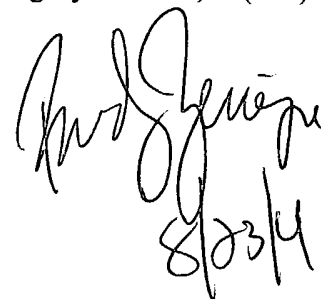
8. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "already present in the initial laminate", and "by material removal") are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

9. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Examiner believes there is some teaching, suggestion, and motivation to use Horiuchi's semi-additive method for trace formation. Bennin's method is not rendered useless in the combination of Bennin and Horiuchi. In fact, Bennin teaches plating steps for trace addition where metallic plating a wiring part by electroplating (column 8, lines 48-55) after forming the wiring part – "A fourth manufacturing step can comprise plating selected areas of the first layer 50 and the third layer 70. To improve terminal contacts plating--nickel, gold, silver, tin, etc.--can be applied on connector sites of the third layer 70, such as the proximal end 73 and the distal end 74.". As a result, Horiuchi's semi-additive method complement's Bennin's existing methods.

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Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (571) 272-1439.



Rudy Zervigon
8/23/14